Longenecker & Associates, Inc.
PO Box 3094
Del Mar, CA 92014

(858) 792-6031
Fax (858) 792-5867
LongnAssoc@AOL.com

September 28, 2004

Mr. David C. McGraw
Business Services Director
One Cyclotron Road
MS: 937-500
Berkeley, CA 94720

Subject: Contract Deliverables
            Contract Number 6715460

David:

We would like to thank you and all of the staff at the Lawrence Berkeley National Laboratory (LBNL) for the time they took from their busy schedules to work with us. The staff is truly impressive in their commitment, knowledge, capabilities, and their openness in our discussions; it was a pleasure completing this important assignment for the University of California, LBNL.

In supporting continuous improvement at the Lawrence Berkeley National Laboratory (LBNL), Longenecker & Associates, Inc. (L&A) was contracted to review and make recommendations regarding management systems for the Lab, and especially those related to Assurance activities. For the purposes of this review we identified Assurance activities to include the following:

> Assessments
> Operational awareness activities
> Quality assurance programs
> Lessons-learned programs
> Accident investigations
> Worker feedback mechanisms
> Performance indicators/measures
> Event reporting processes
> Causal analysis
> Identification of corrective actions and recurrence controls

Corrective action tracking and monitoring
Closure of corrective actions and verification of effectiveness, and
Trend analysis

As a result of our reviews and in accordance with our agreement, L&A has developed a series of contract deliverables. A number of these contract deliverables have been provided to you previously, in compliance with their milestone dates; we have included the entire set of applicable deliverables herein in order to provide a single, complete, summary.

Attachment 1 – Progress and Accomplishments Regarding Best Management Practices/ Productivity Enhancement Initiatives was completed and delivered on August 6, 2004.

Attachment 2 – Recommended, Prioritized Improvements to Assurance Activities was completed and delivered on August 20, 2007.

Attachment 3 – Draft Model to Develop Performance Metrics was completed and delivered on August 27, 2004.

Attachment 4 – Draft Assurance Systems Statement of Laboratory Policy was completed and delivered on August 27, 2004.

Attachment 5 – Draft Governance Model was completed and delivered on September 19, 2004.

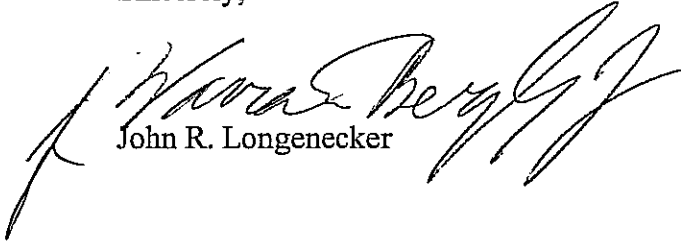Attachment 6 – Sample Performance Indicators has been completed and is delivered herein.

Attachment 7 – Implementation and Communications Plans has been completed and is delivered herein.

We believe that the above information, and the attachments, satisfies our contract deliverables. We look forward to discussing these deliverables with you in the closeout meeting scheduled for October 6.

We would be pleased to assist you in implementing any of the above recommendations, and look forward to the opportunity to work with you in the future on other endeavors.

If you have any questions, please contact Jerry, Warren or myself.

Sincerely,

John R. Longenecker

Longenecker & Associates, Inc.
PO Box 3094
Del Mar, CA 92014

(858) 792-6031
Fax (858) 792-5867
info@longenecker-associates.com

Report on Assurance and Governance for the LBNL

Prepared For

Lawrence Berkeley National Laboratory

By Longenecker & Associates, Inc.

September 2004

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PROGRESS AND ACCOMPLISHMENTS
REGARDING
BEST MANAGEMENT PRACTICES/PRODUCTIVITY
ENHANCEMENT INITIATIVES

Background: Under a charter from the Department of Energy (DOE), a team lead by Lawrence Berkeley National Laboratory (LBNL) and including representatives from DOE and the University of California's Office of the President (UCOP) conducted a pilot study in late 2001 comparing best practices at federally funded research and development centers (FFRDCs) with those at the LBNL. LBNL was selected for the pilot because it has a focused science mission, conducts no classified work, and does not require unique and specialized administrative systems like those associated with nuclear materials, weapons development, or experimental reactors. The purpose of the pilot was to identify and assess best management practices that could be incorporated into management and operating (M&O) contracts for national laboratories.

The team, led by Dr. Sally Benson, Deputy Laboratory Director for Operations, LBNL, compared practices at LBNL with practices at the National Science Foundation's National Center for Atmospheric Research (NCAR) and the National Aeronautics and Space Administration's Jet Propulsion Laboratory (JPL) in seven lines of inquiry. The scope of information gathered included the following lines of inquiry:

    1) Laboratory Contract Management;

    2) Implementation of Operations and Administrative Directives;

    3) Business and Personnel Systems and Policy;

    4) Counterintelligence and Security;

    5) Environmental Health and Safety;

    6) Facilities and Infrastructure; and

    7) Construction Project Management.

As a result of the pilot study, six areas of best management practices emerged. The team then included a number of specific implementation recommendations for LBNL and DOE to consider. The six best management practices areas are listed below.

1. Line Management Accountability. Increase the focus on mission success by integrating administrative and operational (A&O) requirements into mission priorities, and establish line accountability within the program organization of the federal agency and throughout the contractor organization.

2. National Standards. Encourage efficient and innovative support work by establishing performance criteria that are based on applicable national standards instead of agency-specific requirements.

3. Assurance Reviews by External Experts. Enhance assurance and credibility of laboratory stewardship by using nationally recognized experts for A&O performance reviews and compliance audits.

4. Bilateral Decision Process. Tailor implementation of agency directives by taking site-specific conditions into account through a bilateral management decision process.

5. Performance Oversight and Incentives Based on Certified Systems Metrics. Replace transactional oversight of A&O performance with validation of certified systems, and base performance incentives on certified A&O system metrics.

6. Contract-Based Best Management Practices. Embody these best management practices in the FFRDC contract, defining the roles and responsibilities of agency and contractor personnel, behaviors and performance expectations.

About 30 specific actions were recommended to implement these six best management practices at LBNL, and implementation began in early 2002.

Discussion: Many of the specific actions are based on an anticipated change in the contract between the University of California and the DOE. However, DOE recently concluded that the management of the three national laboratories operated by the University of California for the DOE would be competed over the next few years. The first competitions will be for the contracts to manage LBNL and LANL and will be undertaken during 2004 and 2005. Accordingly, many of the specific actions have not been completed due to the lack of a revised contractual relationship.

Nevertheless, there has been progress on a number of the specific implementing actions that do not require underlying contract changes to be completed.

Accomplishments and Progress:

The following summarizes the Best Management Practices areas, the specific recommendations for LBNL from the Pilot Study, and the associated accomplishments and progress.

<u>Line Management Accountability</u>

- Significant reorganization of the relationship between DOE's Office of Science and LBNL. The DOE Site Office would be accountable for field execution of assigned programs and projects and those A&O support functions needed for successful mission implementation.
  Accomplishments and Progress: The DOE Office of Science has been reorganized. As a result of the reorganization, the Oakland Office (OAK) was disbanded. The Head Contracting Authority is at DOE Headquarters, and subject matter experts for the Lab are in Chicago. The Berkeley Site Office (BSO) has been strengthened with additional staff and capabilities.

- DOE Site Office must move from transaction oversight by in-house federal staff to approval of certified systems that are evaluated through external audits and peer reviews.
  Accomplishments and Progress: Transactional oversight is still the primary oversight methodology, however, there have been a number of accomplishments and significant progress toward certification/accreditation.
  - o *DOE certification of the ES&H Self-Assessment Program*
  - o *DOE certification of the Procurement System*
  - o *Department Of Energy Laboratory Accreditation Program (DOELAP) for Radiation Protection*
  - o *Accreditation from American Association for Laboratory Animal Care (AALAC)*
  - o *There is a three year plan in-progress for accreditation from the Accreditation Association for Ambulatory Health Care, Inc. (AAAHC)*
  - o *The Lab is developing a modified version of an ISO 14001 type Environmental Management System (EMS). The LBNL EMS will contain the most crucial elements of the ISO EMS and would avoid much of the ISO-required documentation involved in summarizing and describing existing LBNL activities for the development of an EMS annual review that would be required for strict adherence to the ISO standard. On a three-year cycle, an audit team will be retained to perform a third-party validation of LBNL's EMS program.*
  - o *The Lab has developed a 5-year action plan under the auspices of HRCI to assess and define National Standards of practice for each domain of the Human Resources body of knowledge. The products of the plan will be the development of Accreditation Standards using comparative Best Practice policies, procedures, and quantitative metrics; the LBNL will accredit their Human Resources Management System that supports the operations and science mission of the Lab.*
  - o *An Earned Value Management System (EVMS) supporting project management is in the process of certification.*

o *Through the leadership of the Facilities Division, the Lab is in the second year of a 5-year program cycle to implement a Property Management Engineered Assessment-Integrated System (Industry Best Practice) using the Vanderwild Facilities Associates (VFA) computer-based condition assessment process.*

- Sustain and reinforce the role of DOE's Field Management Council for authorizing new A&O requirements.
  Accomplishments and Progress: There has been no measurable progress; the role of DOE's Field Management Council is uncertain. Note: The Field Management Council, thought not formally disbanded, has not met or functioned for over two years.

- Replace agency reviews of human resource practices and decisions with annual performance oversight by the BSO.
  Accomplishments and Progress: This recommendation is in-progress, but not following a defined plan or schedule.

- Use cost-benefit analysis for setting physical security and cyber security requirements.
  Accomplishments and Progress: There has been no progress; there is no current model to support this recommendation.

- Replace direct federal oversight ("operational awareness") of EH&S with performance-based reviews.
  Accomplishments and Progress: Efforts supporting this recommendation are continuing. The Lab has obtained agreement to align the Contract, Appendix F performance metrics with LBNL's Balanced Scorecard approach – this is a strategic focus approach vs. transactional. However, Operational Awareness oversight is still in-use.

- Streamline and align construction project management with programmatic mission responsibility.
  Accomplishments and Progress: The LBNL has established a Project Management Office; project management training, specifically supporting DOE O 413.3, has been accomplished; project management standards have been defined; the Lab is beginning an internal assessment using the structured Organizational Project Management Maturity Model from the Project Management Institute (PMI).

- Strengthen "landlord" role to better support facility modernization and mission-critical infrastructures.
  Accomplishments and Progress: There has been no measurable progress.

National Standards

- Specify in the LBNL contract that standard federal requirements for contractors and national business standards should be used for administration should be used for administration of operations.
  Accomplishments and Progress: Some progress has been made on this recommendation in that the Contract, Appendix G references a number of national standards.

- Use OMB circulars for providing administrative and operational requirements.
  Accomplishments and Progress: There has been no measurable progress.

- Use fixed indirect cost rates with a provision for efficiency managing differences in indirect cost budgets.
  Accomplishments and Progress: There has been no measurable progress.

- Use OMB circular A-110 (rules for nonprofit organizations) for procurement.
  Accomplishments and Progress: DOE has certified LBNL's procurement system.

- Adopt external standards for regulating EH&S, where feasible.
  Accomplishments and Progress: The LBNL, EH&S program has adopted, and is using, external standards where appropriate. Program review and assessment is on-going for continuous improvement.

Assurance Reviews by External Experts

- (With national standards, assured compliance is generally assessed at the systems level. Systems assurance reviews may use external experts in combination with self-assessments reports of systems-based metrics. With external services, the quality and consistency of available expertise is much improved, and the credibility of review findings is significantly strengthened by the source being external to DOE and LBNL interests.)
  Accomplishments and Progress: Some progress has been made, specifically in the Environmental aspects of ES&H. EH-20 has recognized and endorses the Lab's program use of national standards and external experts.

- Specify in the LBNL contract that nationally recognized external experts will be used to audit, review, and evaluate the compliance of A&O processes and systems.
  Accomplishments and Progress: Use of nationally recognized external experts is a Lab practice, however, no contract changes have been made.

- Comply with the Single Audit Act for business and personnel systems.
  Accomplishments and Progress: There has been no measurable progress.

- Perform independent security risk and vulnerability studies using national experts.
  Accomplishments and Progress: There has been no measurable progress.

Bilateral Decision Process

- (Mission-responsible agency [DOE, etc.] representative and LBNL work as partners in designing approaches to compliance issues and solutions to site-specific problems. Policy should be focused on expectations and outcomes instead of processes.)
  Accomplishments and Progress: The Operating and Assurance Plan (OAP) endorses a tailored approach; the Lab has been working successfully with the BSO in this regard.

- Incorporate language into the LBNL contract that allows flexibility to negotiate with the BSO to develop site-specific implementation of federal requirements.
  Accomplishments and Progress: There has been no measurable progress; there have been no contract changes proposed in this regard.

- Adopt JPL language for the implementation of directives.
  Accomplishments and Progress: There has been no measurable progress; there have been no contract changes proposed in this regard.

- Adopt a "work smart" procedure for all administrative and operational activities.
  Accomplishments and Progress: EH&S has embraced and implemented the "work smart" practice.

- Employ local control and direction for site security programs.
  Accomplishments and Progress: There has been no measurable progress.

- Ensure bilateral agreement on how EH&S directives are implemented.
  Accomplishments and Progress: There is a successful bilateral relationship between LBNL and the BSO regarding implementation of ES&H directives.

- Tailor construction project management to regional standards and industry practices.
  Accomplishments and Progress: There has been no measurable progress.

Performance Oversight and Incentives Based On Certified Systems Metrics

- (The performance-based management process must be enhanced by shifting to higher-level contract metrics that assess the full range, complexity, and interdependence of support systems. LBNL's existing performance-based management system is very expensive to carry out; a streamlined approach that focuses on fewer systems-level metrics would provide greater value.)
  Accomplishments and Progress: Progress has been made through annual adjustments of the Contract, Appendix F performance metrics; Appendix F will be aligned with the Lab's Balanced Scorecard – Strategic focus.

- Incorporate systems-based validation processes and certified systems metrics into the LBNL contract.
  Accomplishments and Progress: There has been no measurable progress.

- Enhance the use of Integrated Safety Management (ISM) by working to nationally recognized standards and oversight based on system self-assessments.
  Accomplishments and Progress: ISM has been successfully implemented at the LBNL; the program is reviewed and assessed for continuous improvement, including but not limited to, incorporation of new/additional national standards.

- Continue and enhance the use of Integrated Safeguards and Security Management (ISSM).
  Accomplishments and Progress: ISSM has been implemented and includes use of ISSM specific metrics. The program is reviewed and assessed for continuous improvement.

- Strengthen LBNL contractor management accountability by: incentivizing each year of outstanding performance with a one-year contract extension (up to a maximum of five one-year extensions to the basic five-year contract) and recognizing unsatisfactory performance with a one-year reduction of the contract's term; and placing more emphasis on program performance.
  Accomplishments and Progress: There has been no measurable progress; there have been no contract changes proposed in this regard.

- Appropriately incentivize facilities maintenance and other support service sub-contracts.
  Accomplishments and Progress: There has been no measurable progress.

Contract-Based Best Management Practices

- (Write LBNL's contract to include the principals of specifying the roles and responsibilities, performance expectations, and behaviors of the Lab, the BSO, and DOE Headquarters staff. The contract should include the set of principles by which the laboratory operates.)
  Accomplishments and Progress: There has been no measurable progress.

- Initiate a project to test and evaluate the Best Management concepts at LBNL.
  Accomplishments and Progress: There has been no measurable progress.

- Incorporate an agreed-to inventory of annual or quarterly business and human resources reports into the contract, consistent with standard business practices.
  Accomplishments and Progress: There has been no measurable progress.

RECOMMENDED IMPROVEMENTS AND PRIORITY
FOR LBNL ASSURANCE ACTIVITIES

Introduction: In support of continuous improvement at the Ernest Orlando Lawrence Berkeley National Laboratory (LBNL), Longenecker & Associates, Inc. (L&A) reviewed the Lab's current assurance-related activities and developed a prioritized set of recommended improvements. Generally, we found that Lab personnel are performing numerous important assurance-related activities even though the LBNL does not have a Laboratory-wide, documented assurance system that corresponds to L&A's understanding of DOE expectations.

We recommend that a Laboratory-wide Assurance System be documented and that additions and improvements be made to current activities. Because of the wide-range of assurance-related activities that are ongoing, the implementation of this Laboratory-wide Assurance System should not be a lengthy or complex process. In order to develop a documented system and implement improvements and additions to current assurance activities, L&A recommends a task-based, step-wise approach. Accordingly, we have organized our recommendations as four steps encompassing 14 specific tasks.

Background and Approach: There are many Industry and Government documents that describe assurance activities. Because of the variation of sources, there are also multiple definitions of terms. In order to minimize the potential for confusion, we have included the following glossary of key terms with our definitions as they are intended in this Attachment.

Glossary of Terms

Assurance System (Contractor Assurance): An Assurance System is the collection of systems, programs, processes and procedures that are used to ensure that the public, workers, the environment, and national assets are adequately protected, and that business operations are performed effectively. Thirteen individual activities may be considered to comprise a system corresponding to the DOE's expectations. However, L&A considers these activities to be interrelated and, therefore, summarized by three critical areas: Assessments; Corrective Action Management; and Performance Metrics.

Assurance System Activities: For the purposes of this review L&A identified Assurance System activities to include the following:

Assessments
Operational awareness activities
Quality assurance programs
Lessons-learned programs
Accident investigations
Worker feedback mechanisms
Performance indicators/measures
Event reporting processes
Causal analysis
Identification of corrective actions and recurrence controls
Corrective action tracking and monitoring
Closure of corrective actions and verification of effectiveness, and
Trend analysis

The above thirteen assurance activities represent good management practice and correspond to our understanding of DOE expectations.

Corrective Action Management: Corrective Action Management is the system of programs, processes and procedures that provides for compiling problem reports, audit and review findings, and other issue descriptions that may require corrective action; evaluating the significance of the problems, findings or issues; identifying the priority of, and assigning responsibility for, corrections; identifying corrective actions, schedule, and resources required; tracking to assure timely closeout of corrective actions; and evaluating the effectiveness of corrective actions. An effective corrective action management system will also provide data for use in trending and identifying global issues. In a number of locations this system is also referred to as a Problem Report/Corrective Action Management system.

Independent Assessment: An Independent assessment is an assessment, review or audit chartered and controlled by a person or organization external to the Laboratory. Under this definition, for example, the University of California Office of the President, the University of California Board of Regents and Subcommittees, and DOE assessments, reviews and audits would be Independent assessments.

Self-Assessment: As used in this Attachment, and we recommend for the Laboratory lexicon, Self-assessment is any assessment, review or audit that is chartered or controlled by the Laboratory Director or any of the LBNL staff. Under this definition, for example, a Director's Review or Red Team assessment would be a Self-assessment, even though the reviewers are primarily from sources external to the Laboratory.

To establish a baseline of current Laboratory Assurance programs, processes, procedures and practices, and to help assure our accurate understanding of LBNL management and staff issues and positions, L&A interviewed more than 20 managers and employees at

both the LBNL and the University of California Office of the President (UCOP). See Appendix A – Personnel Interviewed. We also reviewed more that 40 documents ranging from guidance documents such as the Operating and Assurance Plan to a sampling of reports from formal independent and self-assessments. See Appendix B – Documents Reviewed.

Based on the interviews and document reviews, as well as our individual knowledge, experience and understanding of DOE expectations and practices at other sites, L&A developed a set of prioritized recommendations for improving the assurance system at the LBNL. We believe that implementing the recommendations will both support good business practices and address DOE expectations; we also believe that the L&A approach provides the greatest return by building on the many existing assurance activities at the Laboratory.

Discussion: Based on our interviews, document reviews, individual knowledge, experience, and understanding of DOE expectations and practices at other sites, L&A believes that most of the elements and many of the practices of a comprehensive assurance system are in-place at the Lab; however, several capabilities should be added and a number of practices could be improved. An immediate focused effort should be undertaken to tie-together, document, and implement a Laboratory-wide Assurance System.

Assurance at LBNL Today

The LBNL has a wide range of assurance activities that are ongoing and that correspond to the elements and practices of a good Assurance system. These activities range from use of a "balanced scorecard" in Operations, to a rigorous set of ES&H assessments, to formal Director's Reviews of the science activities, and to more informal management walkthroughs by many LBNL Directors.

The LBNL also has a sound basis upon which to build and document a comprehensive Assurance System. The Operating and Assurance Plan (OAP) for the LBNL describes and mandates many of the activities and elements that are considered necessary for Assurance. One of the main objectives of the OAP is as follows:

> "The OAP provides the framework for Berkeley Lab administrators,
> managers, supervisors, and staff to plan, manage, perform, and assess
> their Laboratory work."

The Objectives section of the OAP further stipulates:

> "The OAP is applicable to all Berkeley Lab organizations. All Berkeley
> Lab operating units shall engage, at some level, with organizing their
> Resources, managing and ensuring the safety of their processes and
> activities, and evaluating the results of their performance."

Although it was written for Laboratory-wide use, the OAP's implementation has been primarily related to ES&H matters. However, because of its content and intended Laboratory-wide applicability the OAP provides an excellent basis that, with some revision and broadening of scope, could serve to document the Lab's comprehensive Assurance System.

Assessments

In addition to the very rigorous and apparently effective ES&H assurance program, virtually every organization we sampled also had assessment and assurance activities ongoing – both formal and informal. Self-assessment activities at LBNL include formal, documented self-assessments that include the Director's Reviews and Red Team assessments, while more informal processes can be related to Lab and Division management meetings, scheduled "open door" office hours, town-hall meetings and facility walkthroughs. Independent assessments include reviews and audits by DOE, the UCOP, the UC Regents Subcommittees, and other outside agencies.

Corrective Action Management

With the variation of formal and informal activities, there is a wide range in the quality and detail of documentation, tracking and follow-up on problems, issues, and corrective actions. Some activities are not well documented; many of the actions coming out of meetings and reviews are not formally tracked; and in few, if any, cases are trending and analysis done. Additionally, we did not find evidence of an established, Laboratory-wide, lessons-learned program to communicate issues and solutions to other potentially affected organizations within the Laboratory.

Performance Metrics

The current Laboratory contract, Appendix F, includes performance metrics. Also, a number of Lab Divisions and programs are using performance metrics. However, there is no standard, guidance or requirement to use performance metrics in management and decision processes. Over the past year, under the sponsorship of the LBNL Deputy Director for Operations, the Lab has undertaken a very commendable effort to strengthen the meaning, use and value of performance metrics. Specifically, a "balanced scorecard" approach to developing metrics that focus attention on mission and strategic plans, and measure the success of the Operations organizations is being implemented. Although this initiative is in its early stages, it will serve as an important piece of a comprehensive assurance system focusing attention at a high-level on an agreed-upon set of metrics.

Finally, it is our experience and general expectation that the importance of a particular program or activity to an organization is reflected in both the specific assignment of responsibility for that activity to an individual or organization, and in that organization's or individual's direct reporting level and authority. At the present time, there is no single organization or individual having the authority and responsibility to coordinate and manage Assurance activities across the LBNL. The current ES&H/OAA organization is primarily focused on ES&H related issues.

Recommendations: The LBNL should implement a Laboratory-wide comprehensive Assurance System. In addition to ensuring that the public, workers, the environment, and national assets are adequately protected and that business operations are performed effectively, the goal of the System should be to assure the Laboratory Director that there will be no problems or issues identified by Independent assessments that have not been previously self-identified. The Assurance System should encompass the thirteen individual activities defined in the <u>Glossary of Terms</u>, above, and emphasize Assessments, Corrective Action Management, and Performance Metrics as the critical areas of focus.

In order to develop a documented system and implement improvements and additions to current assurance activities, we recommend a task-based, step-wise approach. The following four major steps summarize the individual tasks: 1) Establish responsibility, authority and accountability for the Assurance System. Identify a person or organization responsible for, and having the authority to implement an Assurance System, Laboratory-wide. 2) Document the desired assurance system. The description should appropriately incorporate the activities comprising a comprehensive assurance system that is risk-based, reflects the Lab's culture, and meets DOE expectations. 3) Perform a gap analysis. 4) Develop and execute a specific plan and schedule to implement the desired Assurance System.

More detailed descriptions of each of the steps are provided below. Each description includes discussion of the tasks. The tasks are then summarized as a list of specific recommendations that may be used for tracking and implementation purposes.

Step 1

<u>ESTABLISH RESPONSIBILITY, AUTHORITY, AND ACCOUNTABILITY FOR THE ASSURANCE SYSTEM</u> – Put someone in charge. The first step is to identify and appoint a person or organization in charge of, responsible for, and having the authority to implement an Assurance System, Laboratory-wide. Ultimately, we recommend creating an Office of Assurance.

Individual accountability is essential for successful development and implementation of this system. One of our observations is that individual accountability for completion of specific tasks is not a current strength at the laboratory, and therefore, laboratory culture

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change may be required. We believe accountability can be based on a graded-approach and that requirements should be kept to a minimum.

We recommend establishing an Office of Assurance, reporting to the Laboratory Director, with responsibility and authority to manage and coordinate assurance activities Laboratory-wide. The senior management of this Office should be accountable to the Laboratory Director for the overall successful implementation of the LBNL Assurance System. This Office should coordinate and integrate assessments, maintain the corrective action tracking system, manage a Laboratory-wide lessons-learned program, and provide standards and assistance in developing meaningful and useful performance metrics. Additional responsibilities may be assigned as a result of more detailed assurance activities definition and development.

Specific Recommendations:

1. Appoint a person in charge and responsible for developing and implementing the LBNL Assurance System. This person should report, and be personally accountable, to the Laboratory Director and have sufficient authority so that he or she can work directly with and influence Division Directors. This person should be accountable for the plan and schedule for implementing the Assurance System.

2. Establish an Office of Assurance, reporting to the Laboratory Director, responsible for coordinating and managing assurance system activities.

Step 2

DOCUMENT THE DESIRED ASSURANCE SYSTEM – A formal, comprehensive assurance system should begin with a written description including the Laboratory's Vision for Assurance and the Laboratory Director's Policy Statement. The Operating and Assurance Plan provides an excellent base from which to develop an LBNL Assurance System description. The OAP already requires many of the activities and elements that are considered necessary for a comprehensive assurance system. The OAP should be revised as necessary to fully invoke Laboratory-wide applicability; to establish a Laboratory-wide corrective action management system and lessons-learned program; and to add standards for performance metrics and trending.

The Laboratory's Vision for Assurance and the Laboratory Director's Policy Statement are required to define the bases for the system and to establish that the Assurance System is the Laboratory Director's system and he is fully committed to its success. The Vision description should include the reasons, scope, and bases of the system (assessments, corrective action management, and performance metrics). The Policy Statement should be developed by modifying the Statement of Laboratory Policy that is in the current Operating and Assurance Plan. (L&A has provided a *Draft Assurance Systems Statement of Laboratory Policy* as a separate contract deliverable.)

Specific Recommendations:

3. Develop and issue a LBNL Vision for Assurance that includes the reasons, scope and bases for the LBNL Assurance System.

4. Develop and issue a Laboratory Director's Assurance System Statement of Laboratory Policy.

5. Develop and promulgate a written LBNL Assurance System description using the existing Operating and Assurance Plan as a basis. The description should appropriately incorporate the activities comprising a comprehensive assurance system that is risk-based, reflects the Lab's culture, and meets DOE expectations.

Step 3

PERFORM A GAP ANALYSIS – In order to minimize duplication of efforts and most efficiently implement changes and additions to current assurance activities, a comprehensive and accurate status of current Laboratory practices must be determined. To assist the 'person in charge' (see Step 1, above) in developing basis information for the gap analysis, each Division Director should be tasked with compiling a listing of what they believe their Division's current assurance-related activities are, including the use of performance metrics and how actions arising from assurance activities are documented, tracked and closed. By compiling this current information, the activities can be appropriately credited, thus minimizing perturbation of the ongoing activities as a result of an inaccurate gap analysis.

Specific Recommendations:

6. Direct each Division Director to capture and report their organization's assurance-related activities, sorted under a listing of the thirteen assurance activities for a comprehensive assurance system. The information should be provided to the 'person in charge.'

7. Perform a gap analysis of the desired program and activities (see Step 2, above) versus the current activities. The thirteen assurance activities for a comprehensive assurance system can be used as the skeleton for analyses.

Step 4

DEVELOP AND EXECUTE A SPECIFIC PLAN AND SCHEDULE – Once the system description has been developed, the current assurance activities assessed, and the gaps determined, specific areas for assurance improvements will be identified. Based on this input, the 'person in charge' should develop a specific plan and schedule to manage and track the timely implementation of assurance system changes and improvements.

Although a number of suggested improvements have been previously discussed in this Attachment, there are six specific activities and practices where we believe near-term improvements are most desirable and, therefore, should receive priority.

Corrective Action Management

One of the key elements of a comprehensive assurance system should be a Laboratory-wide corrective active management system. This corrective action management system should provide for compiling problem reports, audit and review findings, and other issue descriptions that may require corrective action; evaluating the significance of the problems, findings or issues; identifying the priority of, and assigning responsibility for, corrections; identifying corrective actions, schedule, and resources required; tracking to assure timely closeout of corrective actions; and evaluating the effectiveness of corrective actions. An effective corrective action management system will also provide data for use in trending and identifying global issues. Currently the Lab has a variety of assurance activities that may generate issues that warrant corrective actions and tracking. However, there is no Laboratory-wide, user-friendly system that compiles all problem reports and that ensures that problems will be addressed and tracked by management to closure. We believe that this kind of corrective action management is necessary for a Laboratory assurance system.

Documentation of Closure –

Embedded in the above but worth repeating because of its importance, is L&A's belief that closure of an action arising from assurance activities should be documented. There are a great number of assessments, both formal and informal, being conducted at the LBNL at this time. With the exception of input to LCATS, we did not find or discuss another system or process that formally documents closure of actions. We suggest that the system for formally documenting closure of actions does not need to be complicated or burdensome; it may simply document the action leading to closure, and the date of closure of the action.

Effectiveness Review –

Also related to the above, the corrective action management system should have a built-in requirement to assess the effectiveness of corrective actions and assure that the action(s) really fixed the problem or issue originally identified. In our discussions with LBNL personnel, we found little evidence that there were any follow-up reviews to verify that the corrective actions were effective. Typically effectiveness reviews may be undertaken approximately six months following completion of all corrective actions necessary for issue closure.

Performance Metrics

Many LBNL Divisions and programs appear to be tracking useful performance metrics; for example, the Division-specific metrics being tracked by the Earth Sciences Division and those associated ISSM and ES&H appear to be used and useful. Additionally, the new Operations initiative to use metrics developed from the "balanced scorecard" approach is commendable. However, with few exceptions, we found little evidence of consistency either in the use of metrics among Divisions, or in the relationships of the metrics to the Lab's Mission and Vision.

L&A believes there should be guidance regarding performance metrics expectations, hierarchy, relationships and development. The initiative being undertaken by Operations to develop performance metrics using the "balanced scorecard" approach may be readily extendable to the remainder of the Lab. However, we also believe there are a number of other equally acceptable methods. (L&A has provided a *Draft – Model to Develop Performance Metrics* as a separate contract deliverable.) The emphasis of any model should be that there is a hierarchy and relationship between metrics and that performance metrics apply to all areas and levels in an organization. The one caution we offer regarding metrics is that *they must be used and useful; otherwise you are wasting resources.*

Trending

Trending and analysis is an essential part of a comprehensive and effective assurance system. One of the real values of this aspect of an assurance system is to permit the Laboratory to predict, identify, capture and evaluate issues that represent systemic vulnerabilities. The ability to determine adverse trends and analyze causes is a vital tool for the Laboratory to use to self-identify potentially significant issues. We have previously indicated the need for the corrective action management system to provide for trending and analysis. There is also a need to trend and analyze performance metrics. We believe this trending and analysis function can be a part of the scope of responsibility of the recommended Office of Assurance.

Lessons-learned

Although many of the Lab's Divisions incorporate some form of a lessons-learned process in their management, we could not identify a Laboratory-wide lessons-learned program. The DOE has indicated its belief in the importance of a lessons-learned program by providing a complex-wide database. We believe a Laboratory-wide lessons-learned program is necessary to permit the LBNL staff to benefit from the knowledge of issues and corrective actions developed throughout the DOE complex as well from those problems experienced by other Divisions within the Lab.

<u>Specific Recommendations</u>

8. Develop an assurance system implementation plan and schedule to address the results of the gap analysis. The plan and schedule should identify specific tasks, deliverables, schedules, responsibilities and resource requirements.

9. Develop and implement a Laboratory-wide corrective action management system. The system should provide for managing and tracking Lab problem reporting as well as compiling, assessing and managing findings resulting from assessments, reviews and audits.

10. Develop and implement a requirement to document closure of corrective actions.

11. Develop and establish a requirement to assess the effectiveness of corrective actions that were taken in response to audit and assessment findings.

12. Establish and implement a more standardized Laboratory- and Division-specific, performance metrics system. Performance metrics should be required for all areas and levels in the organization. Performance metrics should be linked to the Lab's mission and contract.

13. Establish an assurance system requirement for trending and analysis. The corrective action management system and performance metrics should be analyzed for trends and global issues.

14. Develop and implement a Laboratory-wide lessons-learned program. The lessons-learned program should evaluate the applicability of reports and appropriately distribute information on lessons-learned throughout the DOE complex as well as from all Divisions at the Lab.

Note: All the above recommendations (Specific Recommendations 1-14) are presented essentially in the priority order that we recommend for implementation.

Conclusions: The LBNL already accomplishes many of the activities and practices associated with a comprehensive assurance system. The Laboratory should not scrap these existing activities, but rather build on them to develop the recommended system. We believe that an Office of Assurance should be established and that staffing of the Office can likely be accomplished via current Laboratory personnel reassignment, versus having to hire additional employees (FTEs). Finally, by following the recommendations outlined above, we believe that the LBNL will establish an assurance system that supports the Lab's vision and goal of being recognized as "best in class" and that meets the DOE's expectations.

LBNL, UCOP
Personnel Interviewed

Karl Olson – Institutional Programs, OPAD

John Chernowski – Office of Assessment and Assurance, EHOAA

Peter Lichty – Health & Safety Group Leader, EHHSH

Ron Pauer – Environmental Services Group Leader, EHESE

Robin Wendt – EH&S Acting Division Director, OPAD

Gary Zeman – Radiation Control Group Leader, EHRCR

Jayne Baynes – Operations Assistant, OPAD

Terry Hamilton – Department Head, Internal Audit Department, OPAD

Sandy Merola – Division Director, Information Technologies & Services, LDDO

Dennis Hall – ICADV

Dwayne Ramsey – Computer Protection Program Acting Program Lead, CSADV

David McGraw – Business Services Director, OPAD

Jim Hirahara – Business & Finance Executive Director, Laboratory Management, UCOP

Pier Oddone – LBNL Deputy Director for Scientific Programs, LDDOMA

Jeffrey Fernandez – Office of the Chief Financial Officer, Acting CFO, BUDO

Jim Siegriest – Physics Division Director, LDDOCP

Merna Hurd – Special Assistant to the Vice President, Laboratory Management, UCOP

Otis Wong – Office of Assessment and Assurance, EHOAA

Gudmundar (Bo) Bodvarsson – Earth Sciences Division Director, LDDOCG

Sally Benson – LBNL Deputy Director for Operations, LDDOCX

Bill Kramer – NERSC General Manager, NEHP

Kem Robinson – Engineering Division Director/Laboratory Project Management Officer, OPAD

Nancy Padgett – Business Manager, EETD, BUADE

George Reyes – Facilities Division Director, OPAD

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